

CERTAINE EXPERIMENTS CONCERNING FISH AND
FRVITE:

Practised by JOHN TAVERNER Gentleman, and by him published for the benefit of others.



LONDON,

Printed for William Ponsonby.

1600.

THE
BADMINTON COIN
COLLECTING FISH AND
FIRE

Edited by John T. Turner
with illustrations
by J. G. Chapman



LONDON

Longman, Williams & Brown, 1800.

1800

TO THE RIGHT
HONORABLE SIR EDMOND
ANDERSON KNIGHT, LORD
CHIEFE IUSTICE OF THE
COMMON PLEAS.

RI G H T Honorable my good Lord, it was my hap lately to light vpon a Book dedicated vnto your Lordship, by one M. George Churcley, intituled, A new booke of good husbandrie, and intreating of fishponds, and ordering of the same: which booke, as it should seeme, was first written in Latine by one Ianes Dubrauius, but transla-
ted into English by the industrie of the said Maister Churcley, wherin his good meaning and trauell is greatly to be commended. I thereby gathering that your Lordship tooke some delight in that practise, & being before that time minded to put in writing certaine experiments, that my selfe had obserued concerning those matters, did presently conclude

with my selfe, humbly to craue that the same
may passe vnder your L. protection : your
vertues also deseruing that I should make
choise herein of your Lordship before others,
as one vnto whom the whole commonweale
of this Realme in general is greatly bounden,
for the great and painfull watchings, care and
trauell you take in administration of Iustice in
your place and calling: and therefore I in par-
ticular, find my selfe willing (if by any meanes
I may) to moue vnto your Lordship any de-
light or liking, though neuer so litle. And if
your Lordship haue bene any practiser of
these delights, I meane making of fishponds,
or planting of fruite, I doubt not but you shal
in this little Treatise, find somewhat that you
knew not before, and thereby your delight
that way augmented, which, if it so happen to
be, my expectation herein is most amptie sa-
tisfied: Beseeching the Almighty, to blesse,
preserue and keepe you and all yours, with
such felicitie, as your heart desireth.

This 22. of Ian. 1600.

You Lordships in all humblenes,

JOHN TAVERNER.



To the Reader.

GOOD Reader, in seeking to shun
that Monster Idlenes, and hauing a
desire by all honest meanes possible,
to benefit this my natvie countrie of
England, and finding my abilitie o-
therwise insufficent to performe
A the same, I haue thought good to set
downe some experiments that my selfe haue had concer-
ning fish and fruite: of which two things, especially of
fruite, although many authors haue more learnedly writ-
ten, yet many of them being strangers inhabiting in Cli-
mates far differing from ours here in England, doe also
for the most part teach how such fruite as their countries
bring forth are to be used, of which kind of fruities here
in England we haue litle or no use. As also concerning
fish, there are none that haue written in our vulgar tong
to anie purpose that euer I haue seene, sauing that one
Maister Churche hath procured to be translated into En-
glish a Treatise compiled by a stranger, a Moranian (as
I take it.) Howbeit by reason the translator (as it should
seeme) had no great experience in that matter, he ther-
fore that shall practise, shall find great want in that booke
to supplie his desires that way. Notwithstanding the good
indeuour of Maister Churche is greatly to be commen-
ded, neither is my meaning herein to say what may be said
in these matters, but onely what things my selfe haue ob-
served and practised. And if I should set downe by way of

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TO THE READER.

preface, the exceeding great benefit that might grow to this Realme, by practising to haue abundance of the two foresaid comodities, the preface would grow to a greater volume then now the whole booke containeth. And although I know that many men can say more then my self can do herein, yet I also beleue that most men know not so much: for whose sake I haue compiled this little treatise, by which, if they take either profit or honest pleasure, I haue my desire. Farewell.



CERTAINE EXPERIMENTS CONCERNING FISH AND FRVITE.

Pirst it is requisite to speake of ponds, I meane such as be necessarie, profitable, and convenient to be vsed with vs here in England, not such in which the prodigall Romains vsed to spend their superfluous wealth and treasure, rather for vaine ostentation, then for any honest recreation of mind, or profite vnto themselves, or the common wealth: wherunto I wold wish our countrey people in all their actions to haue chiefe regard. It should seeme that many of the Romains employed incredible wealth in making of ponds, in which with sea water, they kept diuerse kind of sea fish, for delicacie and wantonnesse, rather then profit: for that such kind of ponds were onely made neare vnto the sea side, wheras the like fish might more conueniently be taken in the sea it selfe. I would rather wish the greatest store of our ponds to be made farre vp land in the inmost partes of the Realme, vnto which places fish cannot well be brought from the sea, to be eaten fresh whilist it is good, and

Certaine Experiments

sweete. The ponds I meane to speake of, shall be of two sorts: the one digged right downe into the ground by labour of man: the other made with a head in a valley betweene two hils, by swelling of the water ouer grassie ground, not in former times couered with water. Those that are digged right downe are for the most part but small, and serue indeed to little vse, vnlesse it be to keepe fish in for the winter time, to spend as need requireth, or to feede fish in: otherwise of themselves they are not able to sustaine any number of fish, in any good sort, to increase in growth or goodnesse of meate, and therefore I meane not to speake much of such ponds. But the other kind of pond made with a head being rightly ordered, as hereafter is mentioned, will giue great nourishment to fish without any feeding saue of it selfe. It is therefore requisite for him that would haue good fish, to haue two such ponds with heads so made, as with their sluices he may lay them drie when he pleaseth, and againe to fill them with water when he shall thinke good, to the end that one of them may lie drie one yeare, & the other the next yeare. The greatnessse of his ponds may be according to the aptnes of the place where he maketh them, and to the cost he meaneth to bestow. And that valley that hath not any sudden descent, but descendeth by little & little, having also some littell rill or brooke running through it, is fittest for this purpose: by reason that in such places a man shall with least charges in making the head overflow greatest quantitie of ground. The sayd ponds

ponds are to be made as followeth.

The making of a pond for fish.

Hauing a place conuenient, viz. a valley betweene two hilles, and some small brooke or rill running through the same, you are to dig a channell or pond as it were from the one hill to the other, ouerthwart the valley: and with the earth that you take out of the same to make your head. Alwayes making your head downe the streame from the channell, so that the channell shalbe the deepest plac: of your pond, and in no wise to dig any earth, or to make any channell on the back-side of your head: for that will much weaken your head. You must also begin the foundation of your head not hard by the brim of your channell, but some eight or ten foote from the same, least the weight of the earth of the head cause your head to slide into the channell: and raise your head not vpright, but slopewise for caluing or slipping downe. And looke how high you meane to make your head, and so much it is requisite to be in breadth in the top thereof, a three times that breadth in the bottome: as for example: If you meane to make your head ten foot high, it had need to be tenfoot broade in the top, and thirty foote broade in the bottome, otherwise it will hardly lye, but calue and slippe downe againe, vnlesse you force it with timber. Howbeit such may be the nature of your earth, as a light sand, or onely chalke, that it will not stand without timber, otherwise a stiffe clay

mingled with grauell, is best for such a head: if your soile be a light sand, or altogether a grauell, or chalke, it will hardly hold water. It is not good to put any timber in your head to beare it vp, but rather only earth being broken very smal, and watered with water often times as you raise it: for that will cause it to bind closer and surer then any ramming or timber worke w ill do. I suppose the Spring time, & Autumnne to be best for the making of such heads, especially if you water it well and break the earth small, that it may drye againe and settle. In the making of the head, you are to lay your sluice in the head against the deepest place of your channell, being made of a whole peece of timber, or at least wise the forepart thereof being a whole peece, and the residue of one or two peeces more, being ioyned very close, and stopped with haire and tarre in the ioynts: for if therein be never so small a hole, it will spoyle your head at the sewing of your pond. Hauing made and hollowed your troughe, hewen through at the tayle, but close at the end next to the pond, you are to naile thereon a strong boord or planke, very close in all places: or else which is better, a slabbe being before the hollowing of your troughe, sawne from the same: then turne that side downeward, and then the upper side will be that which before was the bottom of the troughe: at the end whereof next to the channell in the upper part thereof, you are to make the tampion hole square, and likewise make a square tampion to shut close in the same, with a steale, either

Where to
lay your
sluice.

of

of the same peece which is best , or else strongly mortised with a douetaile mortice into the sayd tampion , and so reaching vp as high as the top of your head , or at least to the uppermost part of the water . And the best fashion for the head of your sluse , is two strong planks , fastened on each side of the tampion hole , being in breadth somewhat broader then the square of your tampion , & grated boordes nailed before & behind the same , some two or three foote from the bottome . But for the more speedy sewing out the water , you may make as it were a nose of grated boordes before the tampion , at the bottome of the sluce , of some three or four foote long , and a foote deepe . The residue of the sluce may be boorded vp to the top with boordes ungrated , and I thinke grated boordes to be better for this purpose , being made with a hand saw , rather then holes made with piercer or augur . The trough of this sluce had need be layd so soone as you begin to make your head , because it may conney the water from you , which else will trouble you in making the channell .

The sluce made , and the channell digged , it may be you shall need more earth to be carried in dung - carts or barrowes which you are still to keepe mingled with water , and the earth broken smal : in frostie weather it is good working of any such head . Also take heede you put not in the sayd head , any dung or turfs of grasse , that will turne to dung : but onely good earth . When the head is raised , it is requisite to settle well before

Certaine Experiments

you fill the same with water, and therefore not good to fill it full the first yeare, but rather halfe full: and to store it with such fish as you meane to keepe therein, in January, February or March: after which time it is not good to carry or handle any fish all the sommer time, vntill it be October or Nouember. The colder the weather is when you handle your fish, the better: unlesse it be for such fish as you meane to spend presently. But store-fish being taken or handled in hot weather, will be sick, and not prosper long time after, and perhaps die thereof, although not presently.

And to speake of fish, I meane such as are vsually kept in ponds or lakes, I will deuide them into two sorte: those that liue by rauening and deuouring of other fish, and the others that liue vpon seedes, roots, weeds, corne, wormes, and such like: for as there are some beasts that do liue chiefly and naturally by flesh of other beasts, and other some that liue onely by corne, grasse, fruit, & such like, & will at no tyme taste of flesh: so there are fishes much like in nature. The fish that liue vpon rauening and deuouring of other fish, are the Pike, the Trought, the Perch, & the Ele: and these kinds will not naturallly feede vpon corne, rootes, seedes, grasse, or such like. But the Carpe, the Breame, the Tench, and the Roch, liue naturally vpon corne, seedes, grasse, wormes, bodes, flies, and such like: & will not naturally feede vpon any other fish, neither hath nature giuen them meanes so to do, for that

When to
store your
ponds.

Not good to
handle fish
in hot wea-
ther.

Rauening
fish.

Fish not of
the rauen-
ing kind.

the

the foresayd deuouring fish haue only dog-teeth, or sharpe teeth, wherewith they bite and hold any other fish that they take: and when that by griping and biting it, they feele it dead, and cease to struggle or striue, then they swallow it downe whole. The other kind do not so: but hauing teeth only like unto man, broade and flat do grind and chew all their meate before they swallow it: and it is as unnaturall for the Carpe, Breame, Tench or Roch to eate another raw fish, as it is for a sheep or a cow to eate raw flesh. The sharpe and deuouring teeth in the Pike, Perch, Trought & Eele, are easily seene and perceiued, but so are not the flat grinding teeth in the other kind of fish. Howbeit if you search diligently the head of the Carpe, Breame, or any the other aforesayd of that nature, & of any bignesse, when it is sodden you shall find two neather iawes, hauing in each iaw a row of flat teeth, like to the eye teeth in a man, & apt to grind & chew withall, with which two neather iawes they grind their meate against a certaine flat bone in the roofe of their mouth, or upper part of their throte, which is commonly called the stone in the Carpes head, and is in stede of his upper iaw and teeth, and of many thought to be a remedie for excessive bleeding at the nose for man. The like is in the head of the Tench and Roch, although by reason of the smalnesse it is not easie to be found. Of the same nature also is the Barbill, Cheuen, Dace, Bleke, and riner Roch: although I haue not seene them vsually in any pond. Howbeit they wil

live and wer in a pond, especially the riuer Roch, but not spawne, vntesse it haue great store of wa-
ter running through it continually, neither will
the Trought spawne in any standing poole, but
will liue and grow very fat and good, if the pond
be of any greatnessse, as some fiue or sixe acres
of ground, or more, and that he may haue good
stoe of small fry to feede on, and will also be
very fat and good all the winter long, by reason
he doth not spawne as aforesayd.

The best fish in my opinion is Carpe,
Breame, Tench, and Perch: howbeit if your
pond be not aboue fourre or fiue acres of ground,
a Breame will be fiue or sixe yeares at the least,
before it be of any bignesse to eate, as also they
will ouer-store any pond with fry, which is a
great hinderance to the growth of your bigger
fish. Having storied your pond, as aforesayd, you
shall find that the first yeare your fish will spawne
exceedingly. Howbeit if any water run through
your pond, your fry will very hardly be kept in:
for that all the beginning of the sommer they
will go away against the streame: and in the lat-
ter end of the sommer they will go away with
the streame, if they be not with very good grates
kept in, and herein you are to use very great
diligence. And therefore your pond being full
of water, it is good to conuey away the residue in
some ditch, along hard by the one side of your
pond, casting the banke of your ditch toward the
pond: the leuel of the water will direct you
where to make your ditch: so may your con-
uey

A Breame
long in
growing, and
a great in-
creaser.

The first
yeare your
fish will
spawne ex-
ceedingly.

The nature
of fish.

uey away your superfluous water. If any wa-
ter runne through your pond, especially in the
Sommer time, it will also make your fish leane
with laboring against it, as it is their nature to
do, and also in manner vnpossible to keepe in
your frie.

No water to
run through
a pond in
the Sommer
time.

A pond being thus ordered, and your fish
therein feeding all the Sommer time, it is re-
quisite that about Hollantide next you sew
your pond, taking out all your fish: the best,
and such as you meane to spend that winter,
to put into small ponds, or stewes, whereas
with a dragge you may take them againe as
you neede to spend them: the other store-fish
you may put into the like pond, as aforesayd,
either new made, or one that hath lien dry all
the Sommer before. Howbeit if you haue any
great number of frie, especially of Breame, it
were better to preserue but part of them, and
the residue to put into some stewe or small pond
with Pikes: so shall you alwayes haue
good Pikes, and also your Carpe, Breame,
and Tench will be very fat and good. If your
ponds be not ouerstored with fry, your pond
being sewed, and your fish bestowed, it is good
to let that pond you last sewed, to lie as dry as
you can by any meanes all that winter, and
the next sommer vntill Michelmas: and then
to fillit with water of the first floud that hap-
peneth about that time: and sew your other
pond betweene Michelmas and Hollantide,
vsing the same as is before rehearsed. As for

How to or-
der your
fish at sew-
ing time.

To preserue
ouer many
fry, is a hin-
derance to
the owner.
To feede
Pikes with
your super-
fluous fry.

having any fish to spend in the Sommer time, it is requisite to trust to your angle, a bownet, a tramell, or such like : by which meanes you shall seldome faile of some fish for your spending. If you should keepe any Carpe, Breame, or Tench in stewes in the Sommer time, they will wax leane, unlesse you do feede them with corne : as barley, sod pease, or oates, or any other kind of corne. It may be heare expected I should set downe some proportion of number of fishes, having regard to the greatnesse of your pond, and the greatnesse of the fish. Surely as the fertility of some soyle will nourish double the number of cattle that some others will do, euен so of pondes : if the soyle bee a fat clay, or other good ground, it will nourish double the number of fish, that a leane barren heath ground or drie sand will do. Howbeit the ordering of a pond in such sort as aforesayd, and to lie dry every other yeare, will much mend any ground euery yeare, especially if in the Sommer time when it lyeth dry, cattell, and especially sheepe may feede and lie therein, as hereafter shall appeare by good reason. Howbeit in an indifferent soile, I suppose you may well keepe fourte hundred Carpe, Breame, or Tench, for every acre, supposing your fish to be eight or ten inches in length; and the greater your pond is, the greater number in proportion it will keepe : as for example : a pond of fourte acres will much better keepe 1600. fish, then a pond of

The proportion
of fish
according
to the great-
ness of your
pond.

two

two acres will keepe eight hundreth of like fish: for euery hundreth of such fish as aforesayd, you may keepe halfe a hundreth Perches in the same pond, after you are once sufficiently stored of frie, and not before: for that a Perch is a very great deuourer of frie, especially of Carpe. I haue seene in the belly of a small Perch sixteene or seuenteenne small Carpe frie at once: but hauing sufficient of frie, they do good in a pond, rather then otherwise: and will themselues be very fat and good. The Pike is in no wise to be admitted into your great ponds, with your other fish, he is so great a deuourer, and will grow so fast hauing his fill of feeding, that being but eight or ten inches in the beginning of Sommer, he may be eighteene or twentie inches before Hollantide, at what time he will eate more fish every day, then will suffice a man, and will feede onelie of Carpe before anie other fish, if there be Carpe frie in the pond. Howbeit hauing two such ponds as aforesaid, made with heads, you shall euerie yeare haue sufficient store of reffuse frie, to feede some good number of Pikes withall, wherewith they will be made verie thicke, sweete, and well growne, but not fatte, unlesse you haue some store of small Eles, wherewithall to feede them some moneth or sixe weekes before you take them to spend: for that only that feeding upon Eles, being cut in peeces, so as they may stir in the wa-
ter, and yet not be able to escape awaie, will

make the Pikes verie fat.

Causes why
ponds shold
lie drie eue-
ry other
yeare.

The causes moving to haue a pond lie but one yeare with water and fish, and the next yeare emptie and drie, do hereafter ensue. First by that meanes you shall auoide superfluous number of frie, which greatly hinder the growth and goodnesse of your greater fish. Secondly, by that meanes you shall so proportion your pond, that it shall never be ouerstored. Thirdly, by that meanes your water shall alwayes be excellent sweete, by reason it overfloweth such ground as hath taken the sunne and ayre all the sommer before: wherein also if cattell do feede, or especially be fodered and lie, their dung and stale together with the naturall force of the Sunne at the next Spring ouerflowing with water, will breed an innumerable number of flies, and bodes of diuerse kinds and sorts, which in a faire sunshine day in March or Aprill, you shall see in the water as thicke as motes in the Sunne, of which bodes and flies the fish do feede exceedingly. Also great store of seedes, of weedes, and grasse, shadding that sommer that it lieth drie, is a great feede to your fish the next Sommer after, when it is ouerflowone with water. The sayd bodes doe for the most part breed of the blowings and seede of diuerse kinds of flies, and such like living creatures in the sommer, when your pond lieth drie, in the dung of cattell, and otherwise: and take life and being the next Spring time

by

by the naturall heate of the Sunne, together
with the moisture of the fat and pleasant
water, as aforesaied: for surely many and sun-
drie kinds of flies that flie about in the ayre
in Sommer tyme, do take life in the water o-
verflowing such ground where they haue bene
left by the blowings and feede of other flies.
And I haue often obserued and beheld in a
sunshine day, in shallow waters, especially
where any dung or fatte earth is therewith
mingled: I say, I haue seene a young fly
swimme in the water too and fro, and in
the end come to the vpper crust of the water,
and assay to flie vp: howbeit not being per-
fittly ripe or fledge, hath twice or thrice fallen
downe againe into the water: howbeit in
the end receiuing perfection by the heate of
the sunne, and the pleasant fat water, hath
in the ende within some halfe houre after ta-
ken her flight, and flied quite awaie into
the ayre. And of such young flies before
they are able to flie awaie, do fish feede excee-
dingly. Fourthlie, your fish shall euerie yeare
haue feeding in proportion to their increasing
in bignesse: for it standeth with reason, that
Carpes or other fish of twelue inches long,
will require more feeding then so many of
si e inches long will do: but chieflie by meanes
aforesayd of sewing euerie yeare, you shall
haue oportunitie to be rid of the great increase
of frie, and your greater fish more sweete and fat
then any other hath by farre.

What ma-
ke ih sweete
fish.

Great difference in
goodnesse of
pond fish. Fish will live in a manner in any pond, and without any feeding, or such other industrie as aforesayd: but then they are forced to liue vpon the muddie earth and weedes that grow in such ponds, and being so fedde, they will eate and taste accordingly: and there is as great difference in taste betweene fish that is kept as aforesaid, and other fish that is kept in a standing pond without feeding or other industrie, as is betweene the flesh of a Larke, and the flesh of a Crow or Kite. And I suppose that that is the cause that most men are out of loue with all pond fish, because they neuer tasted of any good or well ordered pond fish.

That Sommer that your pond lieth drie, as aforesaid, if there happen to grow any sower or rancke weedes therein (as many times there will) it is good to cut them vp, and being dried with the sunne, to burne them, so shall you haue sweete grasse, or yong weeds come in their place, that cattell will feede on, and also the heate of the sunne shall much amend your ground. Also trench out the wa-
ter, that it may lie as drie as may be possible: and if you can plough it, and haue Sommer corne therein, as bucke or barley that Sommer that it lieth drie, I thinke it very good.

I haue heard the common people in the fenne countries affirme, and that very earnestly, that their fishes do feede of ashes, by reason that in a drie Sommer, when much of their

their fenne grounds lie drie, and are pastured with cattell, then towards the winter time such ranke grasse, sedge, reedes, or weedes, as the cattell do leauue vneaten, they will burne them with fire, to the end that the next Sommer such old sedge, reedes, or weedes, may not annoy the comming vp of young and better sedge, reedes, or grasse. And the common people find by experiance, that after such a drie Sommer, as aforesaid, all the next winter the water ouerflowing those grounds, their fish will be exceeding fat and good: and therefore (say they) surely the fish do feede vpon the ashes of the weeds, and such like burnt as aforesaid. But the truth is, in such a drie Sommer as aforesaid, the cattell then feeding in such grounds as then lie drie, do bestow therein great quantitie of dung and stale, wherein is bred great abundance of such bodes, flies, and wormes, as aforesayd; as also the naturall and linelie heate of the Sunne piercing such grounds, doth make the same pleasant and fat, and to bring forth the next Sommer many hearbes and weedes, the seedes of which do yeeld unto fishes verie great foode and nourishment, and not the barren drie ashes, as aforesayd imagined.

He that cannot haue such ponds as aforesaid, and hauiug but some small mote or other horse-pond in his ground, that standeth continually full of water, may often times haue a dish of good fish, if he will bestow some

The second sort of ponds.

How fish
may be fed
in such
ponds.

feeding of corne, as sod barley or pease, cheese-curds, or bloud of beasts, to throw into his pond in the sommer time, for that fish being not of the rauening kind, do then onelie feede. But it behoueth to do it in such sort, as he may be assured that the fish do eate it, and that he be not beguiled with duckes, geesse, or such like. He may therefore make a square thing of some two foote broade, of Elme boordes, with ledges some three or foure inches deepe, and therein sincke his corne with a line tied vnto the foure corners thereof, so that he may pull it vp and let it downe when he pleaseth, and after the fish haue once found the vse thereof, you shall well perceiue they will haunt it. Sweet graines in small proportion are also good, but if they be once sower or mustie, the fish will not feede on them, and also they will stench your pond. The Tench of all other fish will best like to be fed, as aforesaid, and will be very good, sweete, and fatte, and next vnto him the Carpe.

The Tench
good to be
fed.

It is with fish as it is with other creatures, for like as one acre of ground, will hardly feede one ore throughout the yeare, to keepe him in good plight and fat, yet so much corne or hay you may lay in that acre, that you may feede therein ten or twentie oren. And euен so, although one acre of ground ouerflowed with water, will naturallie, and if it selfe keepe but 300. or foure hundred Carpes, or other fishes: yet so much feeding you may adde therevnto,

unto, that it may keepe thre thousand or four thousand in as good plight as thre hundred or four hundred without such feeding. Of all creatures fish are the greatest increasers in number: and so great is the increase of them, that I do verily suppose the Sea it selfe and all fresh riuers likewise, would be ouerstored if they did not deuour one another in very great quantity: yet haue they many other enemies besides fish, that do continually pray and feede vpon them: as, for pond fish, first the small Eles, when the Carps, Breans, Tenches, or Roches do lay their spawne in egges in spawning time, you shall many times see sixe, ten, or more small Eles follow them, and as the spawne falleth from them they eate it, as also Duckes will do the like. Afterward so soone as it is quicke, the Ele, and especially the Perch, will deuour it in great quantitie before it be able to swimme any thing fast. After that, it is foode for the Kings fisher, all kind of shel-foule, the Bitture, the Hearne, the Cormorant, and the Ospray. And when it is at the greatest, as if it bee a Carpe of three foote long, the Otter will kill him: otherwise all ponds would quickly be ouerstored, if it also go not away with flouds, which is greatly to be foreseen. I remember my selfe did once put thre spawning Carps into a pond that was some thre acres of ground, and with them nine or ten milters about February, and in November next following I did seo the same pond, and of those breeders I had 9000. and vpwards

The great
increase of
fish.

Eles and
afterward
Perches
great de-
uourers
offrie.

Fish haue
many en-
emies to de-
stroy them.

How fish do
breede.

of Carpe freie , notwithstanding all the foresaid enemies : and surely a Breame will increase in number much more . The ingen-
dizing and breeding of the like fish as aforesaid , I haue noted to be in this manner , some-
time in May , and sometime in June , as the season happeneth to fall out apt for genera-
tion , the water by Gods prouidence having then a naturall warmth to performe the
same , the male fish by course of nature , will chase about the female , seeking copulation :
and as in all other creatures , so in this the fe-
male seemeth to shun and flee from the male ,
so that you shall see three , foure , or five male
fish chase one female , and so hold her in on e-
uerie side , that they will force her to swimme
through weedes , grasse , rushes , straw , or any
such like thing that is in the pond , wherein
she being intangled and wearied with their
chasing , they find oportunitie to ioyne in copu-
lation with her , mingling their milt with her
spawne , sometime one of them , sometime a-
nother , at which time the spawne falleth from
her like little egges , and sticketh fast to the
sayd weedes : some eight , nine , or ten dayes
after which time it quickneth , taketh life ,
and hath the proportion of a fish : yea two or
three dayes before it quicken , if you take such
an egge and breake it vpon your naile , you
shall perceiue the proportion of a fish therein .
After it is quicke it moueth very little for
some fortnight or three weekees , and then it
gathereth

gathereth together into sculles by the shore side, where the water is shallow: howbeit the Tench frie will lie scattering in the weedes, and not flote in sculles.

And if there run any water from your pond, you shall not possible keepe Eeleſ out of the same, they will come into the same against the streame. Their manner of breeding is very vncertaine and vñknowne, but vndoubtedly they are bred in the brackish or ſea water: and at the firſt full Moone in Maie they begin to come into all great riuers, and out of great riuers into leſſer riuers, and out of thofe leſſer riuers into all ſmall brookes, rills, and running waters, continually againſt the streame all the beginning of Sommer: as likewiſe with the firſt flood that commeth about Michelmas, they couet to go downe the streame, and will not ſtay vntill they come into the deepe and brackiſh waters, if they be not taken or letted by the way. I know that ſome hold opinion that they breed of the May deaw, for prooſe wherof they ſay if you cut vp two turfes of grasse in a May morning, and clap the grallie ſides of thofe turfes together, and ſo lay them in a riuer, you ſhall the next day find ſmall young Eeleſ betweene the ſayd turfes: and ſo you ſhall indeede, for the moſt part do. Howbeit not therefore they do breed of the deaw, for if you likewiſe take a little bottle of ſweete hay, straw, or weedes, that haue had no May deaw fallen

The bree-
ding of Eeleſ
very vncer-
taine and
vñknowne.

Ecles come
from the
brackish
and sea wa-
ter.

In the riuier
of Seuerne
I haue seene
great store
of these
small Eele
frie taken
going a-
gainst the
streame,
when they
are no grea-
ter then a
wheate
straw.

Ecles go a-
gainst the
streame, and
so doth most
other fish
in the spring
time.

Fish couet
to go downe
the streame
in the latter
end of the
Sommer.
Baites for
euery seue-
rall fish.

thereon, and sinke it in a riuier at that time of the yeare, and take it out suddenly the next morning, and you shall find likewise many small Ecles therein. The reason is, at that time of the yeare that riuier bring full of such young Ecles, they will creepe into euery thing that is sweete and pleasant. And for proofe that the sayd Eele frie doe come out of the brackish waters against the streame into all other Riuers, Rils, and Ponds, if in the beginning of the Sommer you do diligently obserue at the taile of any water Mill, especially neare vnto any great riuier, you shall see them in great numbers early in the morning, and late in the euening, in June or July at the chinckes and holes in the floud-gates to labour exceedingly to get vp against the streame, although they be often times driven backe with the violence of the water, yet cease they not still againe to labour vntill they haue gotten vp against the streame. The like do Salmonds, Barbils, Troutes, Roch, Dace, Cherrin, Gogions, and other riuier fish at Meres and Dammes in great riuers, for that they couet to spawne in shallow waters, and not in the deepe: the which thing when they haue performed, they then presently couet to go downe the streame, vntill they come vnto the brackish or sea water.

It may be here expected that I should set downe the baites to be vsed for all kind of pond-fish, for all seasons of the yeare, but therein

I haue not had such exact knowledge to prescribe unto the diligent practiser any better then himselfe can find out. I haue found that the Carpe, Breame, and Tench, being vsed to feeding, will bite at the red worme, paste made of dough, or the grasshopper, most part of the Sommer season. The Tench also is a fish very easilie taken in a Bownet, and who soever hath of them in his ponds, it behoueth him to take great heede that he be not deceived by leud people.

The shallow or pond Roch with the red fings will spawne in most ponds. The riuer Roch and Dace will not spawne in any pond: howbeit if your pond be neare any riuer, and that there runne any water from it in the Sommer time, you shall find that they will come into the same against the streame, where you would thinke it vnpossible: and so will Pickerell and Perch. And I haue heard some affirme very constantly, that water-fowle do often times bring the spawne of such fish in their feathers into ponds. Others will affirme, that the heate of the Sunne may draw vp such spawne of fish before it be quicke, and so the same taking life in the moist ayre, may afterward fall downe in a shower of raine into a pond: the reason that hath moued many men so to thinke, is, because they haue found such kind offish in their ponds, where they are sur: that they nor any other haue euer put any such. Howbeit surely the same haue come into the sayd ponds against the streame, as

Many op-
nions con-
cerning
breeding of
fish.

aforsaid, in Sommer clouds, and not by any such other monstrous generation as is last afore mentioned. And somewhat to say of the growth of fish: as nature may be helped by art in other things, so likewise in fish very much: for that a Carpe may with feeding the first yeare be brought to be sixe inches long, and the next to twelue or foureteene inches, whereas in ordinary ponds without feeding, they will hardly be brought to be fourteene inches in five or sixe yeares.

I do not thinke that ground would yeeld unto the owner any other way so much benefite, as to be converted into such ponds with heads as is afore mentioned, if onely fish were spent vpon the dayes by law ordained for that purpose in this Realme: the which thing if it were obserued, no doubt would turne this Realme to incredible benefite, many and sundry wayes. But now those that should spend such fish, will rather bestow their money in Rabbets, Lapons, or such like. Howbeit I am perswaded that fish vsed as aforesayd, and dressed whilste it is new taken, is very wholesome for mans body, and also more delicate then most kinds offlesh.

A Breame will be very long in growing, before it come to any bignesse, as commonly five or sixe yeares before he be a foote long, but if your water be not very great, he will hardly be a foote long inten yeares.

The Tench will grow and prosper very well:
how-

A Breame
very slow in
growth.

howbeit will never be so great as some Carpes
will be.

I haue seene a Carpe of xxiii. inches be-^{Carpe.}
twene the eye and the forke of the taile, but ne-
ver any Tench aboue two and twenty inches
of like measure.

The Pike will grow exceedingly, if he may
haue his fill of other small fish: as, the first year
to twelue or fourteene inches, the next to twenty
or two and twenty inches.

And whosoever hath ponds with heads as
aforesayd, shall euery yeare very conueniently
feede somē good number of Pikes in some ditch
or small stwo with refuse frie.

If you haue such ponds as aforesayd, often
or twelue acres of ground or more, neare any
riner where Troughts are, you may get
Troughts to put into such ponds with your o-^{Troughts}
ther fish, so there be no Pikes amongst them.
Howbeit when you come to sewe your pond,
and that the water commeth any thing neare
the mud, your Troughts will then die: yet
haue I seene them grow exceedingly in such a
pond in one yeare, and to be very fat and good:
howbeit they must be very charily handled in
the cariage, and a few of them carried in a great
deale of faire and cleane water, and that in
cold wraither, and may not be handled with
hands, but in a hand-net very charily: and so
likewise are all other fish to be vsed, especially
such as you meane to keepe for store.

If you haue Carpes in small ditches, in the

moneth of March, at what time Todes doe ingender, the Tode will many times couet to fasten himselfe vpon the head of the Carpe, and will thereby inuenime the Carpe, in such sort that the Carpe will swell as great as he may hold, so that his scales will stand as it were on edge, and his eyes stand out of his head neare halfe an inch, in very vgly sort: and in the end will for the most part die thereof: and it is very dangerous for any person to eate of any such Carpe so inuenimed.

Fish to be
charily
handled in
the cariage.

It is not sufficient that fish be aliue and swimme away when they are put into a pond, but if they be bruised or take heate in the cariage, they will be long before they recouer againe and fall to their feeding, and sometime never recouer, but after long pining and sicknesse, do in the end die also.

The Carpe of all pond fish will abide most hardnesse in cariage: next to him the Tench, then the Breame, Pike, and Perch. A Carpe in the winter time may be carried aliue in wet hay or grasse that is sweete for the space of five or sixe houres.

The Carpe
will abide
most hard-
nesse.

Tenches
and Ecles
not to be
caried with
other fish.

If you cary any fish in water, let not the Tench or Eele be carried among them, because they cast great store of slune, which will choke and kill your other fish, especially Pike or Perch.

A Pike will hardly feede of any thing except it stirre and be aliue, but the Perch and Eele will feede of the small guts of sheepe being cut, or of any garbage of Chickens, Loneyes, or such like,

like, and of bloud of beasts.

The Tench, Perch, and Eele, being vsed to be fed, will not lightly faile to bite at an angle any time the Sommer halfe yeare.

The feeding of frie the first yeare will make them quickly past many dangers, as of being past danger of eating of some other fishes and foules, as also past danger of going away at grates, or at the holes of water rats in bankes. Also they will be of a larger and greater growth then euer they will be not being fed: and it behoueth to feede them with such foode as they are able to feede on: as, the first moneth with otemeale, or some other meale sodden, and being cold may be like a gelly in thicknesse, a very little in quantity to be laid in shal-low places, where onely the frie do haunt, and not the greater fish. A Carpe frie will begin to feede when he is not aboue an inch long, at what time also they will begin to gather toge-ther in sculles after some fortnight or three weekes, you may then make their meate thic-ker, and increase in quantitie as your frie bee of abilitie to eat it, giuing to euerie kind of frie such feeding as his nature requireth.

It is not good to handle any kinde of frie whilst it is very young and tender, or at least wise not in handes, but in some small mashed hand-net, that is flatte and not deepe like a bagge or a sache, and a few at once, that they rub not one vpon another.

The second yeare you may feede your frie

with sodden barley or mault steeped in water, and the third yeare with sodden pease: for like as any kind of beasts, especially such as chew not the cud, do take more nutriture out of sodden corne, then out of corne being raw: so fishes being of nature more cold then other creatures, take lesse nutriture of raw corne then any other creatures do. And if you feede your fish with raw corne, you shall find it come from them in their dung not halfe concocted, whereby a great part of the feeding thereof is lost and doth no good. It may be demanded if it will quite the cost, to haue fish in this sort fed. Surely if corne be not excessive deare, it will beare the charges very well: for that a small quantity of corne will suffice a great many of fish. Howbeit the other way before mentioned, with ponds with heads, and to lie dry every other yeare, is lesse troublesome, and will breed very excellent, good, sweete, and fat fish: so that they bee not ouerstored, although they haue no feeding by hand.

The more that a pond lieth open unto the Sunne, the ayre, and the winds, the better it is for your fish.

The leaues of any kind of trees, but especially of oke, falling into any pond, is noysome to the fish, and so is the greene boughes of oke, or any other wood except willow.

The haunt of cattell unto any pond is verie

rie good, and nourishing to the fish, especially of kine and oren, and chiefly when such catell do feede where corne hath bene newly mown or reaped, for that therewil then remaine in their dung much corne and seedes of grasse, which the fishes being not of the rauening kind do feede on.

The fish that bee not of the rauening kind, do feede little or nothing in the winter time, but do lie either in holes in the bankes, or in weedes in the bottome of the ponds, to shun the extremitie of cold ayre.

The rauening kind do feede in the winter season, although nothing so much as in the Sommer season.

Some will hold opinion that the Pike will not eat the Perch, because of his sharpe finnes, but I haue often times seene two or three small Perches in the belly of a Pike, and likewise in the belly of an Ele. And I haue likewise seene a Pike choked sometime with eating of a Perch, when as he hath swallowed the Perch with the taile foremost.

But the Pike will not lightly meddle with the Perch if there be any store of other kind of feeding for him in the pond of other small fish.

It is also requisite that the Pike be helped, so that he labour not ouer much in chasing of his pray before he take it, as to haue the tailes of the small fish cut off, when you throw them into the stew or small pond vnto your Pikes, to the

end they may with the more ease take them,
The Perch and Eele will feed of bloud of beasts
as afor esayd , and likewise of the small garbage
of sheepe and such like being cut small , and
also of small frie of fish,either
Dead or aliue.

THE



THE PREFACE CON- CERNING FRVITE.

F the benefite arising vnto the common-wealthe through the abundance of fruite were well weighed and pondered, there would be lawes established for the increase and maintenance therof throughout this Realme.

Many countries as Gloccster-shire, Hereford-shire, Worcester-shire, great part of Kent and Sussex are so replenished with fruite, that it serueth the poore sort not onely for foode a great part of the yeare, but also for drinke the most part of the yeare. I haue knowne in those countries many men that haue 12. or twenty persons vprising and downe lying in their houses, that do not spend most yeares two quarters of malt for their drinke (but onely cider and perry) and also do yearly sell great quantitie. And there is no doubt but in most countries in England there might be the like, if men would generally plant fruite, and notwithstanding take as great commoditie in effect by pasturing or caring of their ground as they now do. But in many places the short estate that men haue in their holdings, and the discommoditie they find in stealers, do discourage them. Howbeit if men would generally plant in their hedge-rowes,

balkes and other places, it would be a very small matter to any one man, although poore folke did now & then take some part of the same. Howbeit it were very necessary that some law were established to punish such offenders, not so much in respect of the value of the thing, as in that it discourageth men to set & plant fruite, and that respect were had to *Moses Law, viz.* that so long as the same extendeth but to the filling of their bellies to expell hunger, it is the more to be borne withall: but if they shall also cary away to any value, there is no reason but that it should be seuerely punished. I am also perswaded that cider and perry is very wholesome for the bodies of naturall English people, especially such as do labor and trauell. It is also by experience found to be very good to furnish ships withall for long voyages by sea, for that a small quantity thereof will relish and giue good taste vnto a great deale of water: and very great commodity might arise to this Realme, if we were able to spare mault to serue the Low countries withall, or rather the same being made into beare, for that our Themes water doth for that purpose passe any other water whatsoeuer: which thing in time might be very commodious vnto our Prince in respect of custom, & likewise to the whole Realme, in respect of maintenance of Nauigation by transporting the same, besides other commodities not heretofore spoken of.

CER-



CERTAINE EXPERIMENTS CONCERNING FRVITE, AS FOLLOWETH.

In our planting of any great quantity of fruite it is necessary first to sow in some bed (being before hand well trenched two foote deepe, and the earth broken small and layd light but not dunged) the kernels of apples, crabs, or pears.

A nursery
of plants
and grafts.

The kernels of apples may be gotten in some good quantitie of such as make apple pies to sell in markets or market townes. The kernels of crabs or peares, are to be picked out of crabs that are stamped for veriuyce, or peares ground or stamp'd for perry: which kernels being sowne in such beds as aforesayd, being kept from cropping of cattell or Coneyes, and also kept with weeding, will in two yeares be ready to remoue and to be set in beds three foote asunder one way, and a foote the other other way, the body being cut off halfe a foote aboue the ground, in which beds having stood one yeare, they may then be grafted with what fruite you please,

a handfull aboue the ground is best grafting, which beds being kept with weeding, you may also commodiously plant strawberies vnder your grafts. Within three or foure yeares after the grafting, they will be ready to remoue into an Orchard, where you may plant them to continue: but if you meane to plant them in your hedge-robes in your ground where cattle com-meth, they had need to be of sixe yeares growth after the grafting, because you may then the more conueniently tie bushes about them, or other prouision to keepe them from cattle: but the wold choke pear that is neuer grafted, will make very good perry.

Also one other way to plant an Orchard may be done by planting of small crab-stockes in beds in soine nursery as aforesayd, three foote asunder one way, and one foote the other way, the ground in the sayd beds being first trenched two foote deepe, and the mould laid light, and the stocke cut off halfe a foote aboue ground: and the next yeare the same to be grafted close by the ground, or at the most foure inches aboue the ground, to the end that if the first grafting happen to faile, it may be againe grafted the second time. Howbeit some also do vse to graft five or sixe foote high, and vpon great olde stockes, the same is not greatly amisse: howbeit the other way is farre better as I take it, for that the scences so grafted five or sixe foote high, are many times broken downe with soules ligh-ting on them, & many times broken downe with the

the wind in the ioynt when they are 3. or 4. years old, which is a great displeasure unto the owner.

Above all things you must foresee, that the ground of your nurcerie or orchard be not naturally ouer wet or moist. It cannot lightly be too drye, for that the rootes will naturally run down-wards, vntill they come vnto sufficient moisture: but if the roote of anie plant be once set too deepe, he cannot helpe himselfe: it is against nature for the roote to grow vpwards, but will rather grow mischiefe and die.

The third way to plant an Orchard, is by setting of slips of trees of cider fruite, which is the speediest & readiest way in shorkest time to haue store of such fruite. But that kind of setting doth seldome prosper, but onely in some few especiall kind of cider fruite. As also an Orchard so planted, will not continue aboue fortie, or at the most fiftie yeares, but it will decay againe.

In planting of an Orchard the greatest care is to be had, that the ground be not too wet: for that a tree planted in such ground cannot prosper: or if it grow, it will not beare other then spotted and cappard fruite, either apple, pearre or plumme, neither will it shoote out or grow in anie good sort. If your ground be naturally wet, it must be holpen with making of trenches betweene euerie row of trees, so as the water may draine away, at the least three foote deepe: and whereas the ground is inclined to moisture, you are to set your trees verie shallow, as halfe a foot deepe, and rather to raise a hillock of earth about

Wet ground
unfit for an
Orchard.

An cspciall
matter to be
noted in
planting of
any trees
whatsocuer.

your tree roote, then to set your tree too deepe near the water. And here note, that euery ground hath an upper crust of earth, which by the natural heate of the Sun, & pleasantnesse of the ayre piercing the same, is made more fruitfull then the residue of the earth is: which upper crust in some grounds is a foote, some two foote, and in some three foote deepe: also in some grounds not aboue halfe a foote deepe. And vnder the same upper crust is either a hote chalke, a drie sand, a barren grauell, or a cold lean clay, or lome, or such like. It is therefore requisite that you set your yong tree in such sort, as that the rootes thereof may run and spread in that upper crust, for that if you set him any deeper, you spoile all.

In many places in a chalke ground, where such crust as aforesayd is very shallow and not past halfe a foote deepe, you shall see most of the rootes of the Elmes Ashes, and other trees there growing, to runne naturally euен three or foure inches aboue the earth: which thing they do to shun the extreame heate of the chalke. The like experience shall you also see in a wet or moorish ground, a great part of the roote of great trees to run also aboue the ground, for that they do naturally shunne the extreame wet and cold of such grounds.

The fattest & fruitfullest ground is not best for fruite, for that the trees growing in such ground will be very subiect to be eaten with cankers, as also the fruite will be much wormeaten.

I suppose the best ground for an Orchard is

a wheate ground, or that which is as it were a mixture of clay and sand, but in no wise inclined to wet or springs of water.

If you plant your trees twenty foote one way and thirty foote the other, you may then very conveniently either plough broade ridges, or mow your Orchard between euery ranke of trees: and such plowing will also do good vnto the roots of the trees, especially if you turne your ground uppward vnto the roots of your trees some three or four plowings together, making your furrow in the middest betweene euery ranke of trees, especially whereas the ground is inclined to wet.

It is also requisite that the place where you set your tree, be digged wide and deepe, to the end that the rootes may haue loose earth to run into: by which meanes the roote spreading and increasing, it will send out the more nourishment and strength into the top.

Also when you plant your young trees in your Orchard, it is requisite to cut off all the top, otherwise he will be in danger to die the next Sommer, by reason the roote cannot the first yeare be able to giue nourishment vnto many boughes & branches. Many couet to haue their trees sixe or seuen foote high before they branch out in top, but I haue found very great inconuenience in so doing, for that when such trees come to beare fruite, the bodies will not be able to sustaine the tops, but that they will bend downe, and often times breake in sunder with the weight of fruite: but to braunch at some foure foote in height, I take to

Many men
are at great
charge in
planting of
Orchards,
and yet can
haue no
good fruite,
only by rea-
son their
trees are at
the first set
too deepe:
howbeit do
not perceiue
the reason
thereof.

be the best, especially where commith no cattell
to crop them.

In my opinion there were no fruite to be com-
pared vnto the Pippin, if it were not so subiect
vnto the canker as it is. There be manie kindes
of good apples, howbeit will not bearre past once
in fiftie or sixe yeares to anie purpose. Some o-
ther kindes will beare euerie second yeare excee-
ding full. Of both which sorts I haue divers
kinds, howbeit cannot giue proper names to e-
uerie of them. The good bearing fruite is fittest
for cider, so it be also naturally moist and not drye.
Howbeit the peare maketh the more delicate
drinke then the apple will do: and I haue seene
some perrie of that strength, that it will warme
the stomacke eu'en like white wine, and tast as
pleasantly. And I am verily perswaded, that a
ground planted with wild peares otherwise cal-
led choke peares, would be verie beneficiall vnto
the owner: for that such kind of fruite is fittest for
perrie, as also for the most part doth beare verie
full euerie yeare: and vntill your trees be of some
ten or twelue yeares growth, you may take com-
moditie by ploughing or mowing your ground,
and grasing the same with horses, and afterward
by mowing and grasing the same with any other
cattell, especially if you set your trees twentie
foote asunder one way, and thirtie foote another
way, as aforesaid.

The Peare will prosper in a ground inclined
to wet better then the apple will do.

There is a disease in trees, which is called a
canker

canker, whereunto the pippin chiefly is greatly subject, and the same doth spoile manie trees. I know no better remedie for the same, then to cut it cleave out in the winter time, which often-times doth helpe the same, so that the bark will againe overgrow the soare, and do well: but if it haue once gone more then halfe about the tree, it will hardly be euer recovered: and for the most part the best and most delicate fruite is most subject to this infirmitie. It may be here expected I should treat of all kindes of grafting, as to graft in the cleft, in the leafe, in the noch, or otherwise: but surely for apples, peares, or most kind of plummes, I haue found to graft in the clift some foure inches aboue the ground to be the best. Howbeit the Abricocke plumme, the vine, and such other as haue great store of pith, they are fittest to be grafted in the leafe, or eie (as they call it.) The third way to graft in the noch, the cyent must be in effect as great as the stocke, and such grafts for the most part grow to be toppe heauie, and therefore that kind of grafting to no great purpose in my opinion.

Some writers teach, that apples may be grafted vpon the willow, the Elme, the Alsh, Alder, and such others: but a man had better be without such fruite-trees in his Orchard then to haue them, for that they will haue a tast of the stocke that they are grafted on. An apple is not good to be grafted, but vpon the stocke of the wild apple or crab, as likewise the peare and warden vpon the wild peare stocke.

If you graft a Beare or a marden vpon a white thorne, it will be small, hard, cappard, and spotted.

The Medler is good to be grafted vpon the white thorne,

The Quince is best to be planted of the wild scences that grow out of the root of other Quince trees, and so likevise the Philbard.

The Chestnut and Walnut are to be set of Nuts: and besides the commodity of the fruite, do also become very good timber.

The Chestnut timber will outlast the heart of oke, to lie either alwayes wet or alwayes dry, or sometime wet and sometime dry.

The Petty will not last soell aboue one yeare, but the Cider will last good three or

three peaces.

FINIS.



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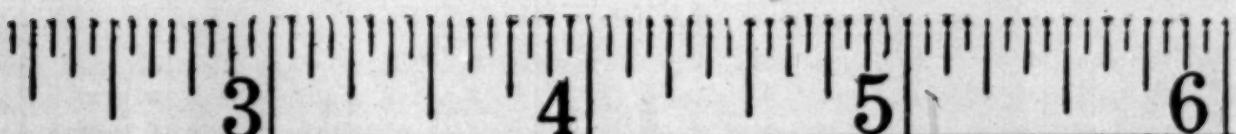
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